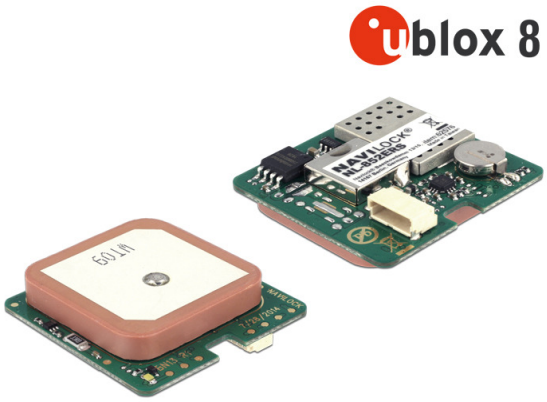
NAVILOCK®



NL-852ERS, NL-852EUSB and NL-852ETLL
User manual (item 62571, 62575 and 62576)

1. Introduction

The engine modules are available, as a serial, USB and TTL GNSS receiver version with patch antenna and u-blox 8 multi GNSS chipset. Depending on the intended use or purpose of use is selected the interface. Thus, they are for example used in a notebook, UMPC, tablet or car PC. Thanks to the 6-pin universal connector and the various interfaces via connector cable can be fitted to almost any device. On pin 6, you can use the PPS signal.

1.1. Contents*

1x Navilock NL-852ERS or NL-852EUSB or NL-852ETTL

* Before using the device, please make sure that all the parts are included in the package. If any parts are missing or damaged, please contact your dealer immediately.

Important health and safety information

When using this product, take the following precautions in order to avoid possible damages and legal consequences. Always follow all safety and operation manuals exactly and keep them for future reference. Observe all warnings in the operation manual and on the product. In order to avoid injuries, electrocution, fire and damages to the product, observe the following precautions:

ELECTRIC SECURITY

This product is designed for operation with power supply via eg. USB port. Any other operation mode can be dangerous and may void the warranty claims for this product. This unit contains an internal back-up battery.

NOTE: RECYCLE OR DISPOSE OF USED BATTERIES OR RECHARGEABLE BATTERIES IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS AND THE INSTRUCTIONS INCLUDED WITH THE PRODUCT.

PRECAUTIONS REGARDING DIRECT SUNLIGHT

Make sure the unit is not exposed to very high humidity and temperatures. Never leave the unit, the battery or the rechargeable battery for an extended period in a vehicle or plate, where the temperature can increase to over 60 °C (140 °F), for example on the dashboard of a car, the window sill or behind a pane of glass, which is directly exposed to the sun or very strong UV light. Otherwise the unit or the vehicle may be damaged, and the battery or the rechargeable battery may overheat.

Damages requiring repairs

Disconnect the unit from the AC supply in the following cases; also disconnect the rechargeable battery and contact an authorized repair man or your dealer.

- Liquid or an object has entered the product.
- The product has fallen down or was damaged.
- There are visible signs of overheating.
- When operated normally, the product does not function flawlessly.

Avoid using the unit directly after strong temperature changes.

If the unit is exposed to strong temperature and humidity fluctuations, condensation can form in the unit. In order to avoid damage to the unit, please wait until the condensation has dried off before using the unit.

NOTE: If you bring the unit from a cold to a warm environment, or vice versa, first let it get accustomed to the new temperature before turning it on.

2. Introduction

2.1 NL-852ERS = Item 62576

On the serial engine module, a USB to serial bridge is built. The ublox chipset incorporates a USB standard output. It must be converted from USB to serial.
PIN1 is at the level of the shield plate and PIN6 at the cut edge of the module.
To connect the cable 95909 will need, which has a plug Aces 87214-0600.

2.2 NL-852EUS = Item 62575

Engine module on the USB, a USB bridge is built. The chipset includes ublox standard USB output. You need the special ublox USB driver to include that item in your operating system. It is installed under Windows Vista/7/8 with the u-center testing tool. There is also a Linux driver available.
PIN1 is at the level of the shield plate and PIN6 at the cut edge of the module.
To connect the cable 95909 will need, which has a plug Aces 87214-0600.

2.3 NL-852ETTL = Item 62571

On the TTL engine module, the output signal directly from the chipset ublox is processed. The ublox chipset includes default the TTL output.
PIN1 is at the level of the shield plate and PIN6 at the cut edge of the module.
To connect the cable 95909 will need, which has a plug Aces 87214-0600.

Link to the manufactor website: **http://www.acesconn.com/**

3. Commissioning

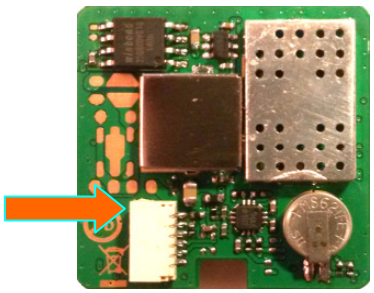
The commissioning of the engine module requires technical expertise that is unsupported solutions. You need knowledge of the matter GNSS to know what protocols you need for your application and the data from it.

4. Type of connection

4.1. Pinout

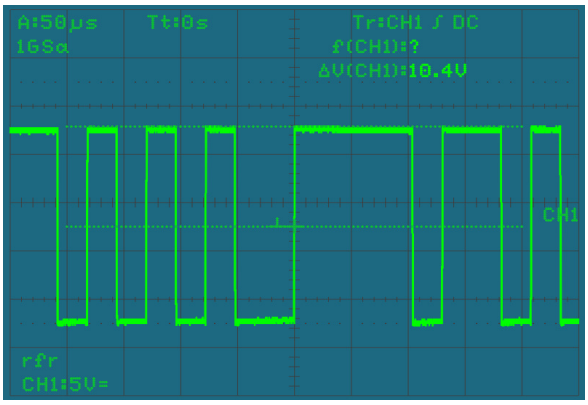
	NL-852ERS	NL-852EUSB	NL-852ETTL
1	VCC	VCC	VCC
2	GND	GND	GND
3	shield	shield	shield
4	D+	RS232 TXD	3.3V TTL TX
5	D-	RS232 RXD	3.3V TTL RX
6	PPS	PPS	PPS

Pin 1



The simplest type of connection, if the appropriate interface type already exists. Should not this be the case, as required in section 3, of technical expertise.

4.1 NL-852ERS Seriell

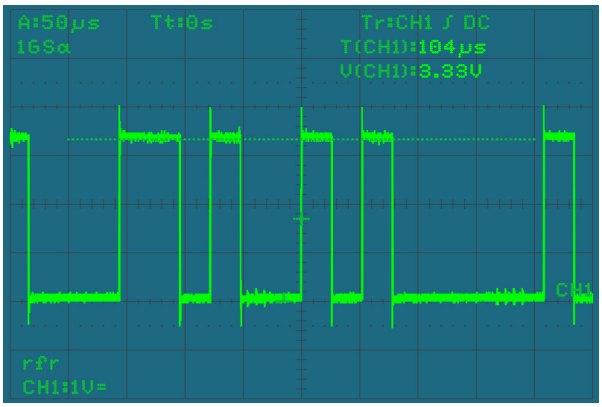


Serial signal level which is necessary for the operation of the NL-852ERS.

4.2 NL-852EUSB USB 1.1

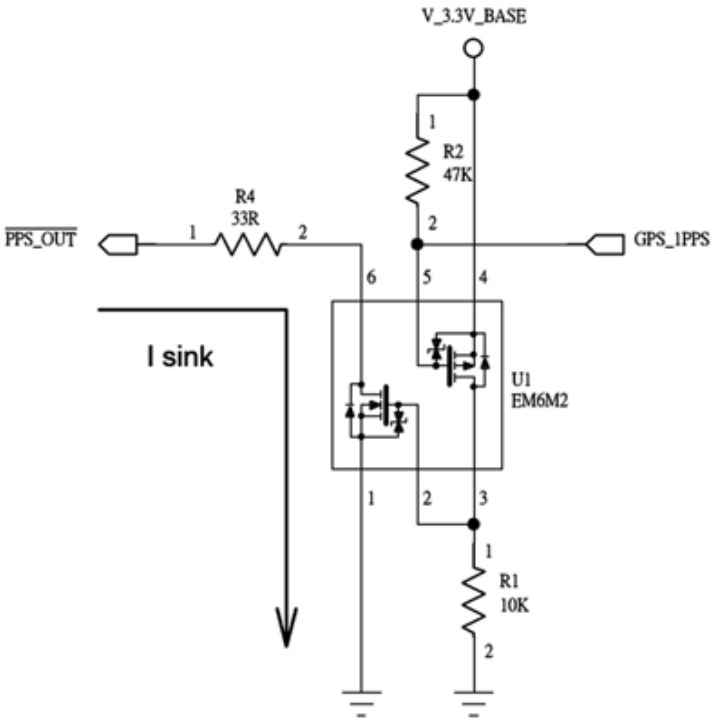
A standard USB 1.1 port is required to operate the NL-852EUSB necessary

4.3 NL-852ETTL TTL



TTL signal levels to operate the NL-852ETTL needed.

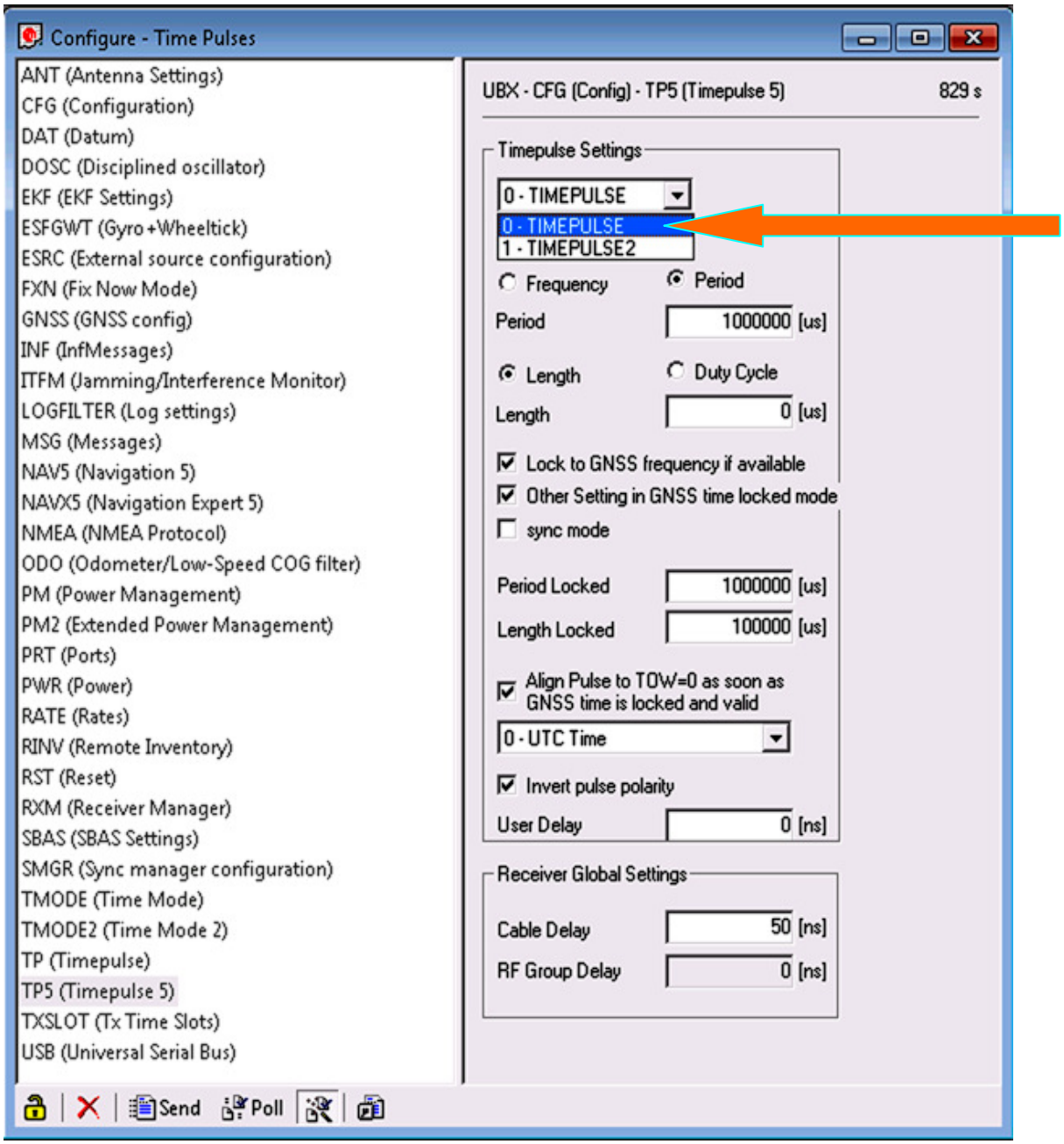
4.4 PPS Pin 6



From GPS_1PPS signal control PPS_OUT Pull Low

WARNING: Please make sure the “I sink” current is less than 100mA, more than 100mA will be cause circuit damage.

The u-center can set the output mode of action, such as 1Hz to 10Hz and other. As below



Please noted the Time pulse settings have two items
0-TIMEPULS is for PPS_OUT
1-TIMEPULS2 is for LED

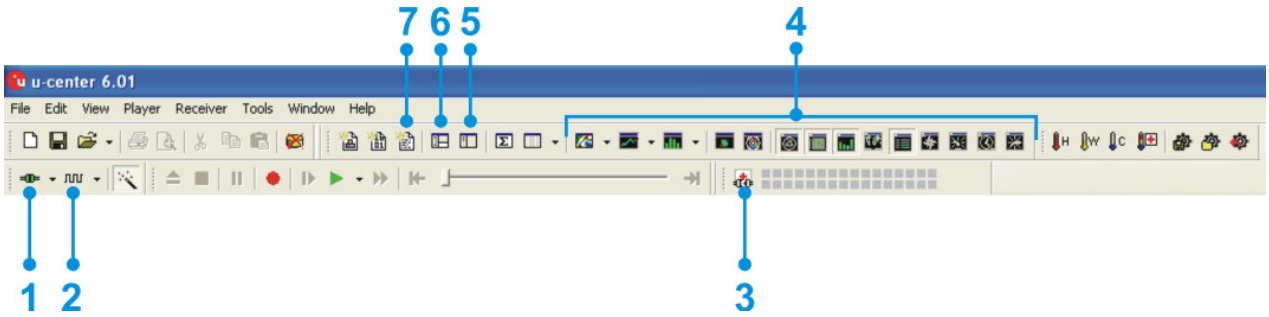
5. Application environment

The USB Engine module can be installed on Windows Vista/7/8, CE and Linux operating a GNSS receiver. But it is not suitable for WINDOWS 98/98SE/Me or MAC OS. No drivers are available for this purpose. The serial and TTL version can be used without dependencies to the OS. There's only concerning the restriction of u-center testing tools, it is available only for Windows Vista/7 and CE.

6. Functional test with u-Center 8.xx

6.1. Install the u-Center software on your unit. Select the version suitable for your system. U-Center is a pure test program and cannot be used for navigation or orientation. It must always be closed after the test. It blocks the COM port and does not allow any access of the navigation or route software to the COM port. It also serves for updating the Assist GNSS data and switching to EGNOS.

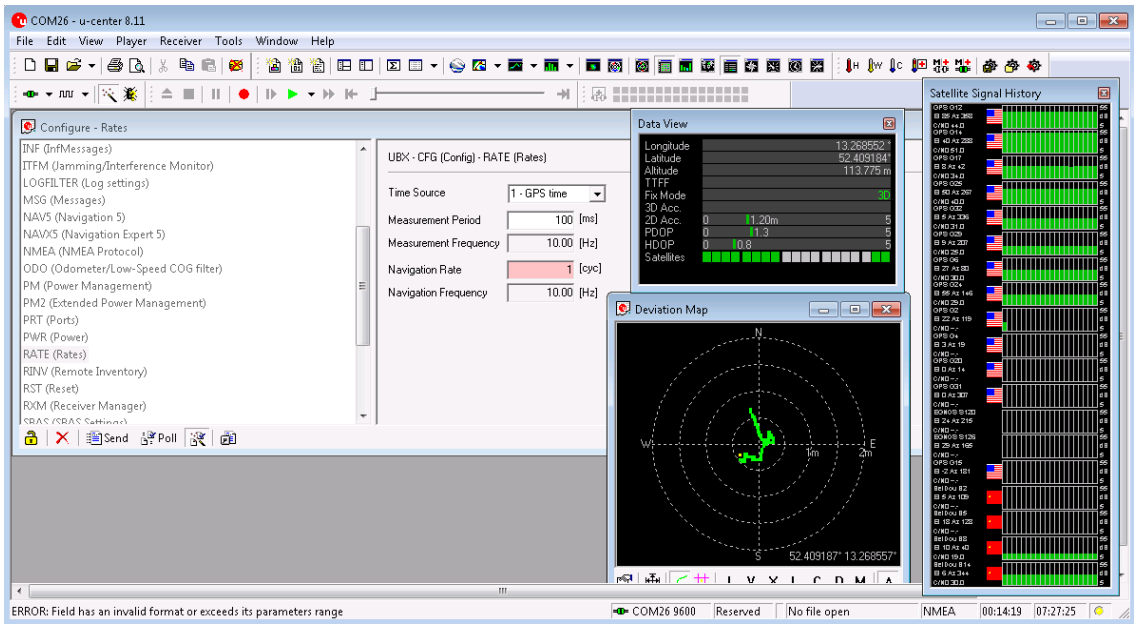
If the NMEA protocol is displayed in u-Center, but you cannot find a receiver in the application software, the connection problem is not with the receiver, but with the selected software setting. In this case, the software manufacturer support center may be able to help you.



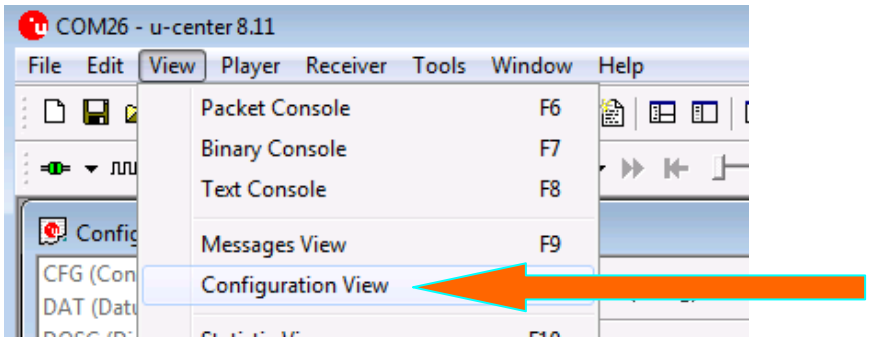
After starting the u-center software, check the functionality of your engine module.

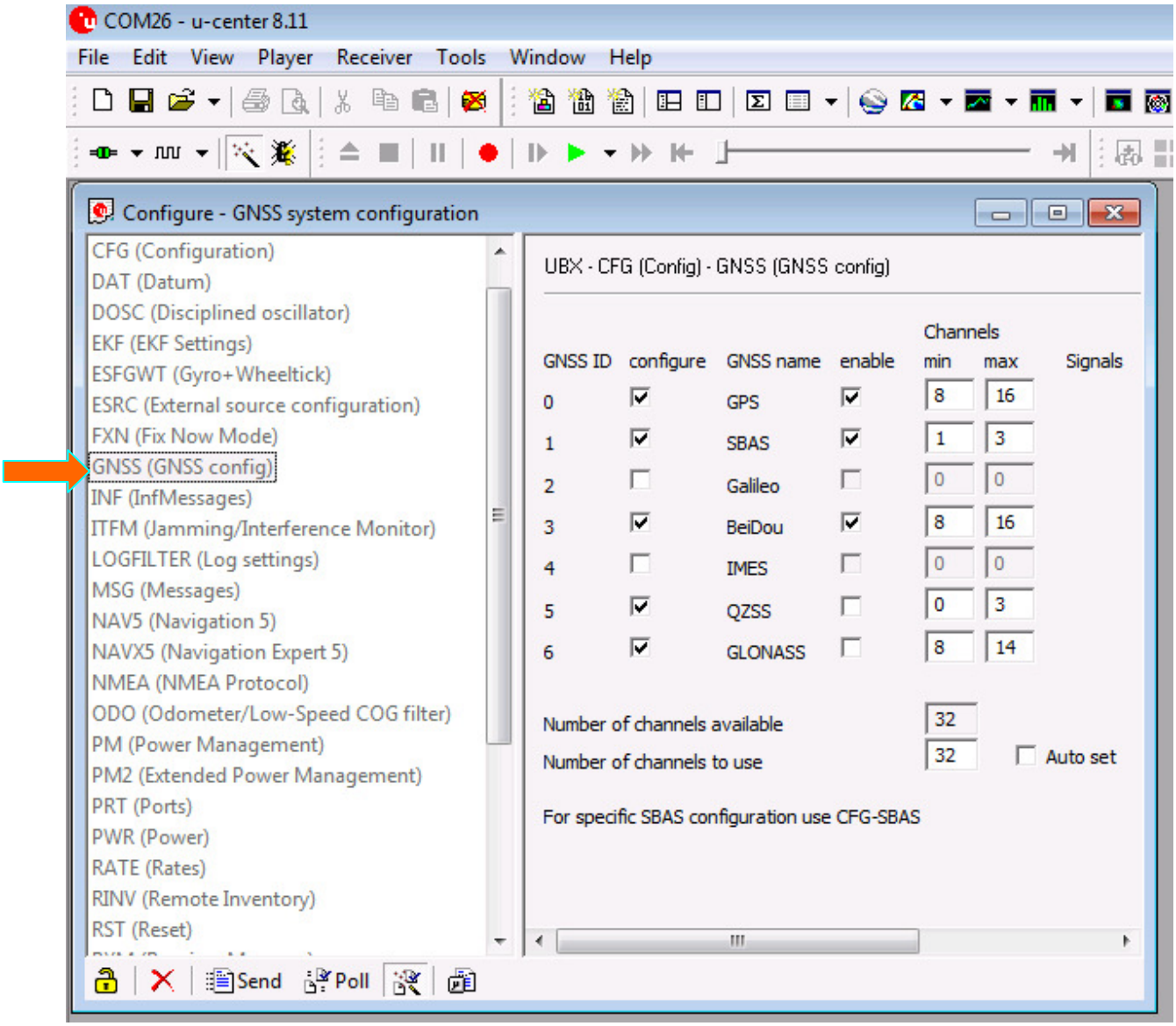
1. Selecting the COM port
2. Selecting the baud rate
3. Downloading Assist GNSS and updating the receiver (only for single GNSS)
4. Visual display of the NMEA data
5. Configuration manager
6. NMEA/UBX message console
7. NMEA text console

As seen below, you can set up your u-center by yourself. Everything important can be connected and displayed immediately. The green bars at the bottom of the picture show the reception quality at your position. If no bars are displayed, please change your position. The engine module cannot receive anything in a closed building. If the blue bars are displayed, the receiver is still acquiring the data and verifying the receipt data.



2. The choice of which GNSS want to use, take as follows:

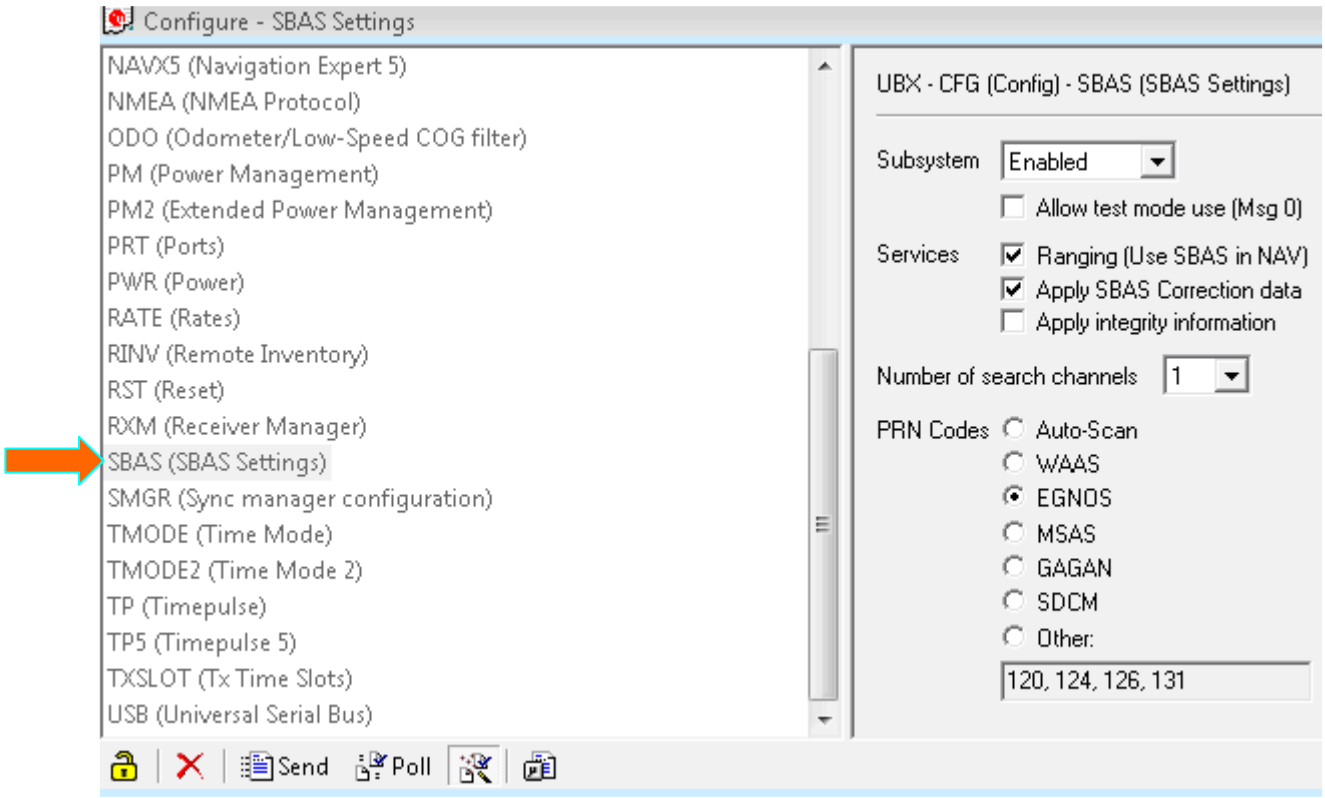



COM26 - u-center 8.11
File Edit View Player Receiver Tools Window Help
Configure - GNSS system configuration
CFG (Configuration)
DAT (Datum)
DOSC (Disciplined oscillator)
EKF (EKF Settings)
ESFGWT (Gyro+Wheeltick)
ESRC (External source configuration)
FXN (Fix Now Mode)
GNSS (GNSS config)
INF (InfMessages)
ITFM (Jamming/Interference Monitor)
LOGFILTER (Log settings)
MSG (Messages)
NAV5 (Navigation 5)
NAVX5 (Navigation Expert 5)
NMEA (NMEA Protocol)
ODO (Odometer/Low-Speed COG filter)
PM (Power Management)
PM2 (Extended Power Management)
PRT (Ports)
PWR (Power)
RATE (Rates)
RINV (Remote Inventory)
RST (Reset)
UBX - CFG (Config) - GNSS (GNSS config)
Channels
GNSS ID configure GNSS name enable min max Signals
0 GPS 8 16
1 SBAS 1 3
2 Galileo 0 0
3 BeiDou 8 16
4 IMES 0 0
5 QZSS 0 3
6 GLONASS 8 14
Number of channels available 32
Number of channels to use 32 Auto set
For specific SBAS configuration use CFG-SBAS
Send Poll

You can select your GNSS system and the combination of serveral systems on the right side. The following combinations are available:

V	GNSS					SBAS						RTCM 2.3
	Galileo (EU)*	GPS (USA)	GLONASS (RUS)	BeiDou (CHN)	QZSS (J)	EGNOS (EU)	WAAS (USA)	MSAS (J)	GAGAN (IND)	SDCM (RUS)*	SNAS (CHN)	GPS
I		x	x		x	x	x	x	x	(x)		x
II		x		x	x	x	x	x	x	(x)		x
III			x	x								
IV		x	x			x	x	x	x	(x)		x
V		x		x		x	x	x	x	(x)		x
VI	x	x	x		x	x	x	x	x	(x)		x
VII	x	x		x	x	x	x	x	x	(x)		x
VIII	x		x			x	x	x	x	(x)		
IX	x			x		x	x	x	x	(x)		

7. EGNOS configuration with u-Center 8.xx

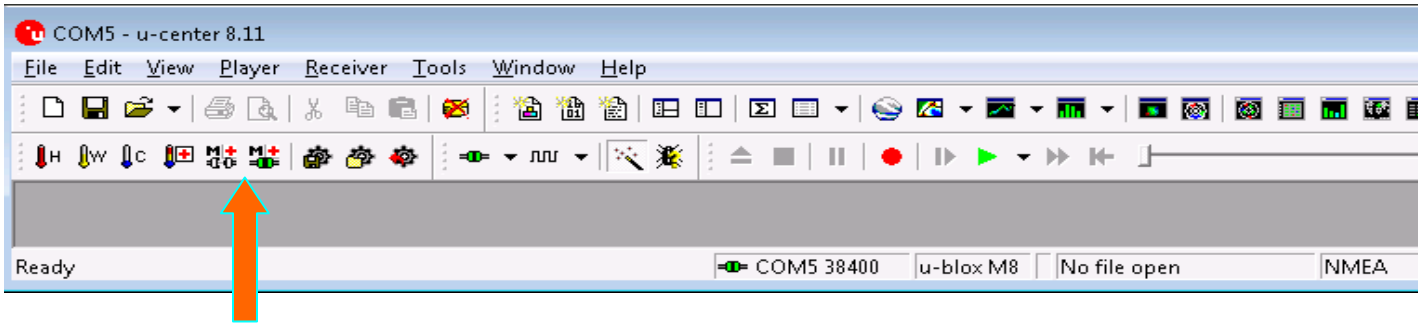


The engine module use EGNOS as default. In the configuration menu you can check these options. For detailed information please use the documentation from u-blox http://www.u-blox.com/images/downloads/Product_Docs/u-Center_User_Guide_(UBX-13005250).pdf.

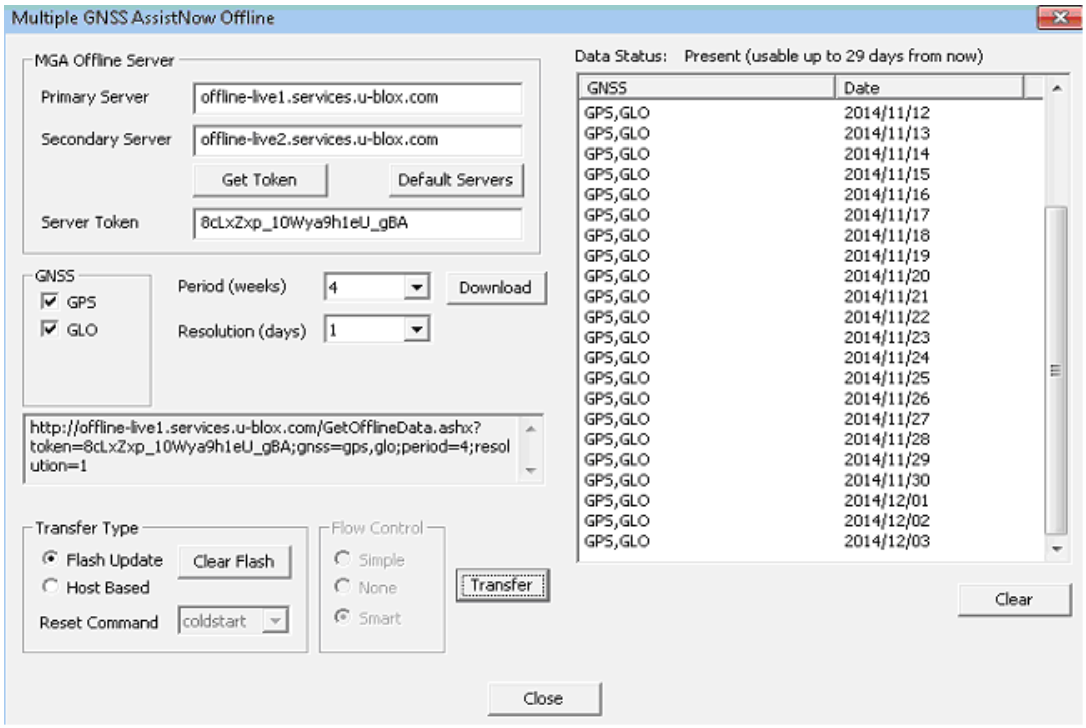
Further information to the u-center can be found in the u-blox documentation under http://www.u-blox.com/products/u_center.html. If you have any questions, please contact u- blox directly.

8. AssistNow configuration with u-Center 8.xx

The engine module supports AssistNow!
AssistNow is a standard A-GNSS service, which increases the performance of the GNSS receiver, by calculating a position almost immediately, even under difficult reception conditions. A-GNSS improves all GNSS capable applications, especially those that require a continuous state of readiness, for example applications for fleet management or GNSS capable hand-held devices, whose users would like to access local services immediately, independently of the reception conditions.
Without A-GNSS, a GNSS receiver must localize at least 4 satellites in direct line of vision, and then download their location data. This process takes 30 seconds under optimal reception conditions, but under less favorable conditions it may take much longer, e.g. in an urban environment or in a building, where the GNSS reception is weaker. AssistNow sends the data directly to the GNSS receiver, thus enabling a quick calculation of the position. AssistNow sends the data directly to the GNSS receiver, thus enabling a quick calculation of the position.
The offline service provides support data, which are valid up to 35 days. The user can thus profit for longer periods from the increased satellite acquisition performance, and they need an internet connection only occasionally, in order to update the support data.
The call-up and data transmission functions can be found in the menu bar of the u-center.
Click on the AGNSS function in the menu bar to update AssistNow and to load the engine module.



Please use the following server token in the configuration menu: 8cLxZxp_10Wya9h1eU_gBA



Further information to the u-center can be found in the u-blox documentation under **http://www.u-blox.com/products/u_center.html**. If you have any questions, please contact u-blox directly.

Danger of explosion at contact with fire!

Do not permanently expose the receiver to temperatures of over 60°C (140°F).

9. Possible sources of error and their elimination

9.1 The white LED doesn't light up after the first connection to the USB port. Make sure that the PC or notebook is turned on, and test the USB port, possibly with another USB device. If this other USB device works fine, please contact the support center. If this other USB device works fine, please contact the support center.

9.2 The engine module needs up to 20 minutes for its first satfix on another continent. To get a Satfix the view to the sky must be unobstructed. Move the engine module as far as possible from the wall. A house wall reflects the signal strongly and contributes to the Satfix time delay.

9.3. The engine module came in touch with jet water (water jet from a shower head or strong rain (when it was mounted on a car roof). Do not connect the receiver with the notebook etc. under any circumstances, because it will otherwise be completely and irreparably destroyed. Return the receiver to our support center, mentioning "water damage". The support center will disassemble the receiver, dry it and check its functionality.

The Navilock repair center tries to be as obliging as possible, so please tell us the real reason for the defect. During the error analysis, we can generally detect if the cause for the defect was an external cause, water damage, fall, over-voltage or the wrong handling of the unit.

Failures are often the result of little causes. It is not always necessary to exchange the product immediately, because this will not solve the cause of the failure if it is not a GNSS hardware problem.

Before visiting your dealer, please contact the Navilock support center. They will try to help you quickly and without further ado, so that the circumstances of an exchange, which might in any case be unnecessary, are avoided.

In this case, please write down a detailed description of the error, add this information to your end device and the software used in this device, as well as the operation environment (operating system, service pack version, CUP size and type, storage size, hard disk drive and interface etc.), and send an e-mail to support@navilock.de.

A support member will look into your problem and work out a solution.

We hope your Navilock product brings you fun and enjoyment!

10. Technical specifications

Chip set manufacturer/type	u-blox 8 multi GNSS	
Channels:	72 channels	
Sensitivity	-167 dBm	
Frequency:	GPS:	L1, 1575.4200 MHz
	BEIDOU COMPASS:	B1, 1561.0980 MHz
	GALILEO:	E1, 1575.4200 MHz
	GLONASS:	G1, 1602.5625 ~ 1615.5000 MHz
Target precisions:		
Position horizontal:	GPS/SBAS/QZSS+GLONASS: 2.0 m CEP	
Time:	1 microsecond synchronized with GPS time	
Speed:	0.1m/s	
Date:	WGS-84	
Protocol:	NMEA-0183 V3.01 GGA, GSA, GSV, RMC, VTG	
Detection rates:		
Cold start	26 s average	
Hot start	1 s average	
Re-Acquisition:	1 s average	
Update rate:	single GNSS:	18 Hz (for example GPS solo)
	multi GNSS:	10 Hz (for example GPS+GLONASS)
Dynamic prerequisites:		
Acceleration limit:	smaller than 4g	
Height limit:	50000 m	
Speed limit:	500 m/s	
Performance:		
Power supply:	5 V	
Connection:	WTB	
Operating temperature:	-20℃ ~ 60℃	
Dimensions (LxWxH)	ca. 30 x 30 x 8 mm	

11. Zertifications

CE

12. Warranty period

Your GNSS receiver will be repaired free of charge within the legal warranty period, unless it was damaged due to external cases, humidity dropping or other damages due to improper usage. Your dealer is always ready to help you. Please send your unit for repairs directly to:

Navilock Repair Center
Beeskowdamm 13/15
D-14167 Berlin-Zehlendorf

Postage must always be paid by the client.

Please add a proof of purchase and a detailed error description. “Doesn’t work” or “defective” is not a detailed error description. Time-based error, meaning how often an error occurs, must be expressly mentioned.

For logistic reasons, we cannot accept returned packages without the postage being paid by the client.

13. Support

For additional support questions, please contact our support center:
support@navilock.de / www.navilock.com or by telephone: +49 30 84716503*.
You can also call the Service Hotline at the following hours: Mo – Fr.: 9:00 – 16:30.

* You will be charged a connection fee for a telephone call to Germany/Berlin, in accordance with the connection fee overview of your telephone service provider.
You can also find current product information on our homepage. www.navilock.com

14. Final provision

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WEEE note

The WEEE (Waste Electrical and Electronic Equipment) directive, which came into force on 13 February 2003, lead to a comprehensive change in the disposal of used electric products. It is the main purpose of this directive to avoid electric waste products (WEEE), while simultaneously promoting the re-usage, recycling and other forms of reconditioning in order to reduce the amount of waste. The WEEE logo on the product and the package shows that the product should not be disposed of with regular garbage. You are responsible for disposing all used electric and electronic devices at the corresponding collection sites. The separate collection and meaningful re-usage of electronic waste helps to deal with natural resources more economically. In addition, re-using electronic waste contributes to the preservation of the environment and human health. Additional information regarding the disposal of electric and electronic devices, their re-usage and the collection sites can be found at your local authorities, disposal companies, specialist shops and the manufacturer of the product.

RoHS conformity

This product meets the requirements of directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003, concerning the limited usage of dangerous substances in electric and electronic devices (RoHS) and its amendments. This product complies with the directive 2011/65/EU from January 3rd 2013.

EU Import:
Tragant Handels- und Beteiligungs GmbH Beeskowdamm 13/15, 14167 Berlin, Germany

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